IN THE CLAIMS

A complete listing of the claims follows and replaces any prior versions.

1   1.   (Currently Amended) A read channel, comprising:

2   a Viterbi decoder for decoding a received data stream to produce an estimated

3   sequence representing decoded data bits; and

4   a sequence selection stage for analyzing error events and selecting a sequence

5   based upon the analysis of the error events;

6   wherein the sequence selection stage and the Viterbi decoder each include at least

7   one threshold, and wherein at least one threshold of the sequence selection stage and the

8   Viterbi decoder is dynamically biased to improve detection reliability in the presence of

9   data dependent noise and wherein an offset term is provided specific for ~~each~~ the

10   sequence selection stage to produce an error sequence, the offset terms comprising an

11   offset threshold dependent upon the sequence at the output of the Viterbi decoder.

1   2.   (Original)   The read channel of claim 1 further comprising an

2   equalizer for receiving a readback signal and producing a desired target response at the

3   Viterbi decoder.

1   3.   (Original)   The read channel of claim 1, wherein the Viterbi decoder

2   further comprises:

3   a branch metric generator for generating distance metrics for a received data

4   stream;

5   a plurality of adders for adding the distance metric for each possible branch to a

6   previously accumulated path metric to produce a revised path metric for each branch;

7   at least one comparator for comparing the revised path metric for a plurality of

8   branches; and

9   a selector for selecting a path metric for a path having a smallest path metric.

1   4.   (Original)   The read channel of claim 3, wherein the at least one

2   comparator includes a threshold for making a bias adjustment to improve detection

3   reliability in the presence of data dependent noise.

1   5.   (Original)   The read channel of claim 4, wherein the threshold is

2   adjusted to choose a sequence with more transitions.

1   6.   (Original)   The read channel of claim 4, wherein the threshold is

2   adjusted to choose a sequence that compensates for polarity dependent noise.

1   7.   (Original)   The read channel of claim 6, wherein the threshold is

2   adjusted to choose a sequence with more ones when polarity dependent noise makes ones

3   more noisy.

1   8.   (Original)   The read channel of claim 6, wherein the threshold is

2   adjusted to choose a sequence with more zeroes when polarity dependent noise makes

3   zeroes more noisy.

1   9.   (Previously Presented)   The read channel of claim 1, wherein the

2   sequence selection stage further comprises:

3   a plurality of error event filters, operatively coupled to the Viterbi decoder, for

4   identifying an error event and producing an output error;

5   a plurality of adders, coupled to the error event filters, for combining the output

6   error with the offset term specific for each error event filter to produce an error sequence;

7   and

8   a selector for deciding on one error sequence from the plurality of adders.

1   10.   (Previously Presented)   The read channel of claim 9, wherein each

2   of the offset terms comprise a threshold, each of the offset thresholds being adjusted to

3   improve detection reliability in the presence of data dependent noise.

1   11.   (Canceled)

1   12.   (Currently Amended) The read channel of claim [[11]] 1, wherein the

2   offset terms comprising an offset threshold are adjusted to choose a sequence with more

3   transitions.

1   13.   (Currently Amended) The read channel of claim [[11]] 1, wherein the

2   offset terms comprising an offset threshold are adjusted to choose a sequence that

3   compensates for polarity dependent noise.

1   14.   (Previously Presented)   The read channel of claim 13, wherein the

2   offset threshold is adjusted to choose a sequence with more ones when polarity dependent

3   noise makes ones more noisy.

1   15.   (Previously Presented)   The read channel of claim 13, wherein the

2   offset threshold is adjusted to choose a sequence with more zeroes when polarity

3   dependent noise makes zeroes more noisy.

1   16.   (Currently Amended) A signal processing system for providing read

2   channel functions, comprising:

3   a memory for storing data therein; and

4   a processor, coupled to the memory, the processor configured for decoding a

5   received data stream to produce an estimated sequence representing decoded data bits, for

6   analyzing error events and for selecting a sequence based upon the analysis of the error

7   events;

8   wherein the processor includes at least one threshold, and wherein at least one

9   threshold is dynamically biased to improve detection reliability in the presence of data

10   dependent noise and wherein an offset term is provided specific for ~~each~~ the selected

11   sequence ~~selection stage~~ to produce an error sequence, the offset terms comprising an

12   offset threshold dependent upon the sequence selected by the processor ~~at the output of~~

13   ~~the Viterbi decoder~~.

1   17.   (Currently Amended) The signal processing system of claim 16, wherein

2   the processor is further configured for receiving a readback signal and producing a

3   desired equalized target response ~~at the Viterbi decoder~~.

1   18.   (Original)   The signal processing system of claim 16, wherein the

2   processor is further configured for adding the distance metric for each possible branch to

3   a previously accumulated path metric to produce a revised path metric for each branch,

4   for comparing the revised path metric for a plurality of branches and for selecting a path

5   metric for a path having a smallest path metric.

1   19.   (Original)   The signal processing system of claim 18, wherein the

2   processor adjusts the comparing based upon adjustment of the threshold to improve

3   detection reliability in the presence of data dependent noise.

1   20.   (Original)   The signal processing system of claim 19, wherein the

2   threshold is adjusted to choose a sequence with more transitions.

1   21.   (Original)   The signal processing system of claim 19, wherein the

2   threshold is adjusted to choose a sequence that compensates for polarity dependent noise.

1   22.   (Original)   The signal processing system of claim 21, wherein the

2   threshold is adjusted to choose a sequence with more ones when polarity dependent noise

3   makes ones more noisy.

1   23.   (Original)   The signal processing system of claim 21, wherein the

2   threshold is adjusted to choose a sequence with more zeroes when polarity dependent

3   noise makes zeroes more noisy.

1   24.   (Canceled)

1   25.   (Previously Presented)   The signal processing system of claim 16,

2   wherein the offset terms comprise an offset threshold, each of the thresholds being

3   adjusted to improve detection reliability in the presence of data dependent noise.

1   26.   (Previously Presented)   The signal processing system of claim 25,

2   wherein the offset terms comprising an offset threshold are made dependent upon the

3   estimated sequence.

1   27.   (Previously Presented)   The signal processing system of claim 26,

2   wherein the offset terms comprising an offset threshold are adjusted to choose a sequence

3   with more transitions.

1   28.   (Currently Amended) A signal processor configured for performing read

2   channel operations, wherein the signal processor ~~decoding~~ decodes a received data stream

3   to produce an estimated sequence representing decoded data bits, ~~analyzing~~ analyzes

4   error events and ~~selecting~~ selects a sequence based upon the analysis of the error events

5   based upon a chosen threshold, wherein the threshold is dynamically biased to improve

6   detection reliability in the presence of data dependent noise and based upon an offset

7   term specific for ~~each~~ the selected sequence ~~selection stage~~ for producing an error

8   sequence, the offset terms comprising an offset threshold dependent upon the sequence

9   selected by the signal processor ~~at the output of the Viterbi decoder~~.

1   29.   (Currently Amended) A data storage system, comprising:

2   at least one storage medium for storing data thereon;

3   a motor for moving the at least one storage medium;

4   a transducer, operatively coupled to the at least one storage medium, for reading

5   and writing data on the at least one storage medium;

6   an actuator, coupled to the transducer, for translating the transducer relative to the

7   at least one storage medium; and

8   a read channel for processing a data stream received via the transducer, the read

9   channel further comprising:

10   a Viterbi decoder for decoding a received data stream to produce an

11   estimated sequence representing decoded data bits; and

12   a sequence selection stage for analyzing error events and selecting a

13   sequence based upon the analysis of the error events;

14   wherein the sequence selection stage and the Viterbi decoder each include

15   at least one threshold, and wherein at least one of the threshold of the sequence selection

16   stage and the Viterbi decoder is dynamically biased to improve detection reliability in the

17   presence of data dependent noise and wherein an offset term is provided specific for ~~each~~

18   the sequence selection stage to produce an error sequence, the offset terms comprising an

19   offset threshold dependent upon the sequence at the output of the Viterbi decoder.

1   30.   (Original)   The data storage system of claim 29 further comprising an

2   equalizer for receiving a readback signal and producing a desired target response at the

3   Viterbi decoder.

1   31.   (Original)   The data storage system of claim 29, wherein the Viterbi

2   decoder further comprises:

3   a branch metric generator for generating distance metrics for a received data

4   stream;

5   a plurality of adders for adding the distance metric for each possible branch to a

6   previously accumulated path metric to produce a revised path metric for each branch;

7   at least one comparator for comparing the revised path metric for a plurality of

8   branches; and

9   a selector for selecting a path metric for a path having a smallest path metric.

1   32.   (Previously Presented)   The data storage system of claim 31,

2   wherein the at least one comparator adjusts the threshold for making a bias adjustment to

3   improve detection reliability in the presence of data dependent noise.

1   33.   (Original)   The data storage system of claim 32, wherein the threshold

2   is adjusted to choose a sequence with more transitions.

1   34.   (Original)   The data storage system of claim 32, wherein the threshold

2   is adjusted to choose a sequence that compensates for polarity dependent noise.

1   35.   (Original)   The data storage system of claim 34, wherein the threshold

2   is adjusted to choose a sequence with more ones when polarity dependent noise makes

3   ones more noisy.

1   36.   (Original)   The data storage system of claim 34, wherein the threshold

2   is adjusted to choose a sequence with more zeroes when polarity dependent noise makes

3   zeroes more noisy.

1   37.   (Previously Presented)   The data storage system of claim 29,

2   wherein the sequence selection stage further comprises:

3   a plurality of error event filters, operatively coupled to the Viterbi decoder, for

4   identifying an error event and producing an output error;

5   a plurality of adders, coupled to the error event filters, for combining the output

6   error with the offset term specific for each error event filter to produce an error sequence;

7   and

8   a selector for deciding on one error sequence from the plurality of adders.

1   38.   (Previously Presented)   The data storage system of claim 37,

2   wherein each of the offset terms comprise an offset threshold, each of the thresholds

3   being adjusted to improve detection reliability in the presence of data dependent noise.

1   39.   (Previously Presented)   The data storage system of claim 38,

2   wherein the offset terms comprising an offset threshold are made dependent upon the

3   sequence at the output of the Viterbi decoder.

1   40.   (Previously Presented)   The data storage system of claim 39,

2   wherein the offset terms comprising an offset threshold are adjusted to choose a sequence

3   with more transitions.

1   41.   (Previously Presented)   The data storage system of claim 39,

2   wherein the offset threshold is adjusted to choose a sequence that compensates for

3   polarity dependent noise.

1   42.   (Previously Presented)   The data storage system of claim 41,

2   wherein the offset threshold is adjusted to choose a sequence with more ones when

3   polarity dependent noise makes ones more noisy.

1   43.   (Previously Presented)   The data storage system of claim 41,

2   wherein the offset threshold is adjusted to choose a sequence with more zeroes when

3   polarity dependent noise makes zeroes more noisy.

1   44.   (Currently Amended) A read channel, comprising:

2   means for decoding a received data stream to produce an estimated sequence

3   representing decoded data bits; and

4   means for analyzing error events and selecting a sequence based upon the analysis

5   of the error events;

6   wherein the means for analyzing error events and the means for decoding each

7   include at least one threshold, and wherein at least one of the threshold of the means for

8   analyzing error events and the means for decoding is dynamically biased to improve

9   detection reliability in the presence of data dependent noise and wherein an offset term is

10   provided specific for means for analyzing error events and selecting a sequence to

11   produce an error sequence, the offset terms comprising an offset threshold dependent

12   upon the sequence at the output of the ~~Viterbi decoder~~ <u>means for decoding</u>.

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